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Amendments to the Claims

No claims are being amended by the present Response. The listing of all claims in their current form is reproduced below.

1. (Previously Presented) A system for high availability clustering of a group of computer nodes, comprising:

a Java-based cluster server executing on a Java virtual machine on a computer, wherein said Java-based cluster server provides an application access to a set of resources of multiple resource types, wherein two or more resource types correspond to two or more different application servers within a cluster, wherein said resources, and application servers are available at one or more computers in the cluster, and wherein the resources, and application servers are grouped by resource type within the set of resources;

a resource interface provided by said Java-based cluster server that provides an abstraction layer and allows the Java-based cluster server to receive uniform requests from the application and communicate the requests to said set of resources;

a plurality of plugins that are plugged into the resource interface to provide a set of application-specific callbacks from the Java-based cluster server to the set of resources, wherein the system includes a plugin for each resource type corresponding to the different application server, and wherein each plugin implements a resource API to encapsulate the plugin's particular resource type-specific behavior and to isolate the Java-based cluster server from said behavior while providing access to its pool of resources; and

a JNDI interface provided by said Java-based cluster server, wherein the JNDI interface provides an interface between the Java-based cluster server and a JNDI-compliant database;

wherein the resource interface accepts additional plugins that are plugged into the resource interface for other resource types; and

a GLocal Update Protocol (GLUP) mechanism that employs a distributed global lock with sequence numbers to serialize propagation of global events across active members of the cluster, wherein each global update is associated with a unique sequence number such that each said active member of the cluster has an identical view of an ordering of the global events.

2. (Previously Presented) The system of claim 1 wherein each of said Java-based cluster servers includes a heartbeat interface that provides heartbeat information to other Java-based cluster servers at said other application servers.

3. – 4. (Canceled)

5. (Previously Presented) The system of claim 1 wherein the system includes a cluster administration utility for accessing and administering the Java-based cluster server using remote method invocation calls.

6. (Original) The system of claim 1 wherein each resource has a resource type associated with it.

7. (Original) The system of claim 6 wherein resources are the object instances of their respective resource types.

8. (Original) The system of claim 1 wherein a resource is any of a computer, internet protocol address, disk, database, or file system or application.

9. (Previously Presented) The system of claim 1 wherein the Java-based cluster server defines resource groups that includes clusters of resources.

10. – 11. (Canceled)

12. (Previously Presented) A method for providing a high availability clustering framework system for a group of computer nodes, comprising the steps of:

allowing an software application to access, via a Java-based cluster server executing on a Java virtual machine on a computer, a set of resources of various resource types, wherein two or more resource types correspond to two or more different application servers within a Java-based cluster wherein said resources are available at said computer or at another computer, and wherein the resources and application servers are grouped by resource type within the set of resources;

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providing a resource interface at said Java-based cluster server that provides an abstraction layer and allows the Java-based cluster server to receive uniform requests from the Java application and communicate the requests to said set of resources via a plurality of plugins that are plugged into the resource interface;

wherein the plurality of plugins are plugged into the resource interface to provide a set of application-specific callbacks from the Java-based cluster server to the set of resources, wherein the system includes a plugin for each resource type corresponding to the different application server, and wherein each plugin implements a resource API to encapsulate its the plugin's particular resource type-specific behavior and to isolate the Java-based cluster server from said behavior while providing access to the set of resources;

wherein a JNDI interface provides an interface between the Java-based cluster server and a JNDI-compliant database;

wherein the resource interface accepts additional plugins that are included in the resource interface for other resource types;

providing a GLobal Update Protocol (GLUP) mechanism that employs a distributed global lock with sequence numbers to serialize propagation of global events across active members of the cluster, wherein each global update is associated with a unique sequence number such that each said active member of the cluster has an identical view of an ordering of the global events.

13. (Previously Presented) The method of claim 12 wherein said Java-based cluster server includes a heartbeat interface provides heartbeat information to other Java-based cluster servers at said other application servers.

14. – 15. (Canceled)

16. (Previously Presented) The method of claim 12 wherein the system includes a cluster administration utility for accessing and administering the Java-based cluster server using remote method invocation calls.

17. (Original) The method of claim 12 wherein each resources has a resource type associated with it.

18. (Original) The method of claim 17 wherein resources are the object instances of their respective resource types.

19. (Original) The method of claim 12 wherein a resource is any of a computer, ip address, disk, database, or file system or application.

20. (Previously Presented) The method of claim 12 wherein the Java-based cluster server allows for clustering resources within a resource group.

21. – 28. (Canceled)

29. (Previously Presented) A method for high-availability clustering, comprising the steps of:
receiving requests at a Java-based cluster server executing in a Java virtual machine on a computer from an application to access one or a plurality of application servers of different types within a cluster, wherein the application servers are available at one or more computers within the cluster;

communicating the requests to a Java-based cluster server that operates at the computer and provides access to the plurality of application servers, wherein the Java-based cluster server further comprises a resource interface that provides an abstraction layer and allows the Java-based cluster server to receive uniform requests from the client application and communicate the requests to the application servers; and

using a plurality of plugins that can be plugged into the resource interface to provide application-specific callbacks from the Java-based cluster server to the application servers, wherein the system includes a plugin for each application server type, and wherein each plugin implements a resource interface that encapsulates the particular resource type-specific behavior for that application server type, and isolates the cluster server from that behavior while still providing access to the application server;

wherein a JNDI interface provides an interface between the Java-based cluster server and a JNDI-compliant database; and

providing a GLocal Update Protocol (GLUP) mechanism that employs a distributed global lock with sequence numbers to serialize propagation of global events across active members of the

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cluster, wherein each global update is associated with a unique sequence number such that each said active member of the cluster has an identical view of an ordering of the global events.

30. (Previously Presented) The method of claim 29 wherein, for each application server type, an appropriate plug-in is loaded at the time the first application server of a defined type is created, and wherein a handle is created to the specific resource instance, which can then be used by the Java-based cluster server in subsequent method calls.

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